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TECHNICAL MEMORANDUM

Utah Coal Regulatory Program

February 16, 2010

TO: Internal File

THRU: Daron Haddock, Team Lead

FROM: James Owen, Reclamation Engineer

RE: Winter Quarters Ventilation Facility, Canyon Fuel Company, LLC, Skyline Mine, C/007/0005, Task ID #3463

SUMMARY:

On January 11, 2010, Canyon Fuel Company, LLC submitted a revised application requesting approval to construct a ventilation facility in the Winter Quarters Canyon. The facility proposed to add approximately 7.93 acres to the permit area. The site is located approximately ½ mile west of the main historic Winter Quarters town site. The ventilation facility will include 3 mine openings. These openings will be a 20-foot diameter vertical shaft, an 8-foot diameter escape shaft, and a 20-foot wide slope driven at 18 degrees down.

A sediment pond will be located at the east end of the Winter Quarters Ventilation facility site. The pond is designed to treat the approximately 3.69 aces of disturbed and undisturbed area associated with the facility. The area under the pond is not expected to subside. Engineering design specifications for the Winter Quarters Ventilation Facility pond were included with the application

TECHNICAL ANALYSIS:

ROAD SYSTEMS AND OTHER TRANSPORTATION FACILITIES

Regulatory Reference: 30 CFR Sec. 784.24, 817.150, 817.151; R645-301-521, -301-527, -301-534, -301-732.

Analysis:

(Section 3.2, pg. 3-63(i)) Access is via an existing road up Winter Quarters Canyon. A road approximately 300 feet from the existing road will be constructed to access the pad site. Construction will include an access road from the existing road to access the Winter Quarters Ventilation Facility (WQVF) pad site. (Section 4.4, pg. 4-30) Waste material generated from the Winter Quarters Ventilation Facility to create the facility pad. In the event there is an excess of material that cannot be stores on site, the material will be transported to the Scofield Waste Rock site. (Section 4.20, pg 4-114(a)) The pre-existing road in Winter Quarters Canyon has been classified as an ancillary road, and a "450 foot" access road is referenced.

Findings

(R645-301-527, R645-301-534) The applicant must include a section, or edit a section of the application to include a more detailed description of each road. All roads intended for use must be classified and specifications for each road must be included in terms of usage, maintenance, possible damage, improvements, alterations, construction, design, location, reclamation, etc. If waste material is to be transported to the Scofield Waste Rock site, details must be included in terms of transportation method and road adequacy. Detailed plans, maps, cross-sections, etc. for all roads must also be included.

APPROXIMATE ORIGINAL CONTOUR RESTORATION

Regulatory Reference: 30 CFR Sec. 784.15, 785.16, 817.102, 817.107, 817.133; R645-301-234, -301-412, -301-413, -301-512, -301-531, -301-533, -301-553, -301-536, -301-542, -301-731, -301-732, -301-733, -301-764.

Analysis:

All highwalls and cutslopes will be reclaimed using geotechnically stable fill slopes with surfaces that have been sufficiently roughened with deep gouging. The pad will be graded back to the approximate original contour at a 2:1 slope. Slope stability and failure calculations and analyses are included in Attachment C of the application package.

Findings:

In terms of engineering and design specifications, the application meets the requirements of the State of Utah R645-Coal Mining Rules.

MINE OPENINGS

Regulatory Reference: 30 CFR Sec. 817.13, 817.14, 817.15; R645-301-513, -301-529, -301-551, -301-631, -301-748, -301-765, -301-748.

Analysis:

When sealing at reclamation, the shaft(s) per 30 CFR Part 75.1711-1 and R645-301-551 will be fitted with a minimum 6-inch thick cement cap, encased in an approximately 5-foot thick collar, vented with a 2-inch diameter pipe extending a minimum of 15-feet above the cap and backfilled to the surface. When sealing the slope, sealing will consist of solid, substantial, incombustible material for a distance of at least 25 feet into the opening. Permanent closure measures will de designed to prevent access to mine working by people, livestock, fish and wildlife to keep acid or other toxic drainage from entering groundwater or surface waters.

Findings:

(R645-301-551, R645-553.260, R645-536 through R645-536.200, R645-536.210) As per R645-301-551, the two shafts described/referenced in Section 2.2.12, Section 4.1.2, and Section 4.9 of the application, must be capped and backfilled. Filling details are not sufficient for compliance with Coal Mining Rules requirements. The above-mentioned sections (including the drawings, plans, and cross-sections within Section 4.9) of the application must be edited to include specifications, details, drawings, cross sections, etc. for filling the shafts, as per 30 CFR Part 75.1711-1 and R645-301-551. Filling shall be for the entire depth of the shaft, and for the first 50 feet from the bottom of the coal bed, the fill shall be of incombustible material. The applicant must also demonstrate that the shaft fill will be stable and include a description of the measures to be used to backfill the shaft. In Section 4.16, pg 4-90, the applicant states that "At reclamation, the developmental waste will be used in backfilling of the Declined Slope, the vertical shafts and attainting (AOC)." According to R645-553.260, disposal of underground development waste will be in accordance with R645-536 through R645-536.200, wherein the applicant is required to demonstrate that disposal facility (the shaft) will be designed using prudent engineering practices. According to R645-536.210, the applicant must ensure mass stability and prevent mass movement during and after construction. Capping details are adequate and comply with 30 CFR Part 75.1711-1 and R645-301-551. Details included for sealing the slope entry are also sufficient to satisfy Coal Mining Rules requirements.

HYDROLOGIC INFORMATION

Regulatory Reference: 30 CFR Sec. 784.14, 784.29, 817.41, 817.42, 817.43, 817.45, 817.49, 817.56, 817.57; R645-301-512, -301-513, -301-514, -301-515, -301-532, -301-533, -301-542, -301-723, -301-724, -301-725, -301-726, -301-728, -301-729, -301-731, -301-733, -301-742, -301-743, -301-750, -301-751, -301-760, -301-761.

Analysis:

A sediment pond will be located at the east end of the Winter Quarters Ventilation facility site. The pond is designed to treat the approximately 3.69 aces of disturbed and undisturbed area associated with the facility. The area under the pond is not expected to subside. The pond will be operated in accordance with WPDES Discharge Permit Conditions. Engineering design specifications for the Winter Quarters Ventilation Facility pond were included with the application. Within Attachment C, the permitee has submitted settling pond design considerations that reference the calculation and analysis of an adequate safety factor (1.3) as per R645-301-533. Soil properties were used as input criterion for *Slide 5.0*, a computer program created by RocScience. Safety factors were calculated through *Slide*'s utilization of Bishop's Simplified Method of Slices. The expected minimum safety factor of the proposed sediment pond is 2.75. It is expected that the pond embankment will be stable under anticipated operating conditions. Tables within Attachment C include the geotechnical data as required by R645-301-533.712.

Findings:

In terms of engineering and design specifications, the application meets the Hydrologic Information requirements of the State of Utah R645-Coal Mining Rules.

MAPS, PLANS, AND CROSS SECTIONS OF RECLAMATION OPERATIONS

Regulatory Reference: 30 CFR Sec. 784.23; R645-301-323, -301-512, -301-521, -301-542, -301-632, -301-731.

Analysis:

The application package included maps, plan, profiles, cross sections, etc. for the proposed facilities for the ventilation shaft pad, access roads, operational surfaces, sediment ponds, road and drainage details, retaining walls, and proposed reclamation surfaces.

Findings:

(R645-301-521, 521.180) In Section 3.2, 3-31, the applicant states: "the 28-ft vertical shaft will be approximately 300 feet deep and constructed using one of two methods". Also, the shaft depicted with the drawing titled: *Winter Quarters Ventilation Shaft Proposed Abandonment* appears to be a 28-ft vertical shaft. These details are inconsistent with Section 2.2, 2-21(a),

where it states that there will be one 20-ft shaft and one 8-ft shaft. The above-mentioned sections must be edited to clarify and include how many shafts are proposed and their specifications, details, drawings, cross sections, etc. Details should clearly define the proposed shaft(s) specifications. The map entitled *Winters Quarters Ventilation Shaft Pad Proposed Facilities Plan* appears to have the details of two separate shafts. References to a 28-ft shaft must be eliminated if no such shaft will be sunken or raised. Also, all maps, plans, cross sections, etc. must be stamped/certified by a licensed professional engineer.

RECOMMENDATIONS:

Approval will not be recommended until the following deficiencies are addressed:

- **(R645-301-527, R645-301-534)** The applicant must include a section, or edit a section of the application to include a more detailed description of each road. All roads intended for use must be classified and specifications for each road must be included in terms of usage, maintenance, possible damage, improvements, alterations, construction, design, location, reclamation, etc. If waste material is to be transported to the Scofield Waste Rock site, details must be included in terms of transportation method and road adequacy. Detailed plans, maps, cross-sections, etc. for all roads must also be included.

- **(R645-301-551, R645-553.260, R645-536 through R645-536.200, R645-536.210)** As per R645-301-551, the two shafts described/referenced in Section 2.2.12, Section 4.1.2, and Section 4.9 of the application, must be capped and backfilled. Filling details are not sufficient for compliance with Coal Mining Rules requirements. The above-mentioned sections (including the drawings, plans, and cross-sections within Section 4.9) of the application must be edited to include specifications, details, drawings, cross sections, etc. for filling the shafts, as per 30 CFR Part 75.1711-1 and R645-301-551. Filling shall be for the entire depth of the shaft, and for the first 50 feet from the bottom of the coal bed, the fill shall be of incombustible material. The applicant must also demonstrate that the shaft fill will be stable and include a description of the measures to be used to backfill the shaft. In Section 4.16, pg 4-90, the applicant states that "At reclamation, the developmental waste will be used in backfilling of the Declined Slope, the vertical shafts and attainting (AOC)." According to R645-553.260, disposal of underground development waste will be in accordance with R645-536 through R645-536.200, wherein the applicant is required to demonstrate that disposal facility (the shaft) will be designed using prudent engineering practices. According to R645-536.210, the applicant must ensure mass stability and prevent mass movement during and after construction.

- **(R645-301-521, 521.180)** In Section 3.2, 3-31, the applicant states: "the 28-ft vertical shaft will be approximately 300 feet deep and constructed using one of two methods".

Also, the shaft depicted with the drawing titled: *Winter Quarters Ventilation Shaft Proposed Abandonment* appears to be a 28-ft vertical shaft. These details are inconsistent with Section 2.2, 2-21(a), where it states that there will be one 20-ft shaft and one 8-ft shaft. The above-mentioned sections must be edited to clarify and include how many shafts are proposed and their specifications, details, drawings, cross sections, etc. Details should clearly define the proposed shaft(s) specifications. The map entitled *Winters Quarters Ventilation Shaft Pad Proposed Facilities Plan* appears to have the details of two separate shafts. References to a 28-ft shaft must be eliminated if no such shaft will be sunken or raised. Also, all maps, plans, cross sections, etc. must be stamped/certified by a licensed professional engineer.

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